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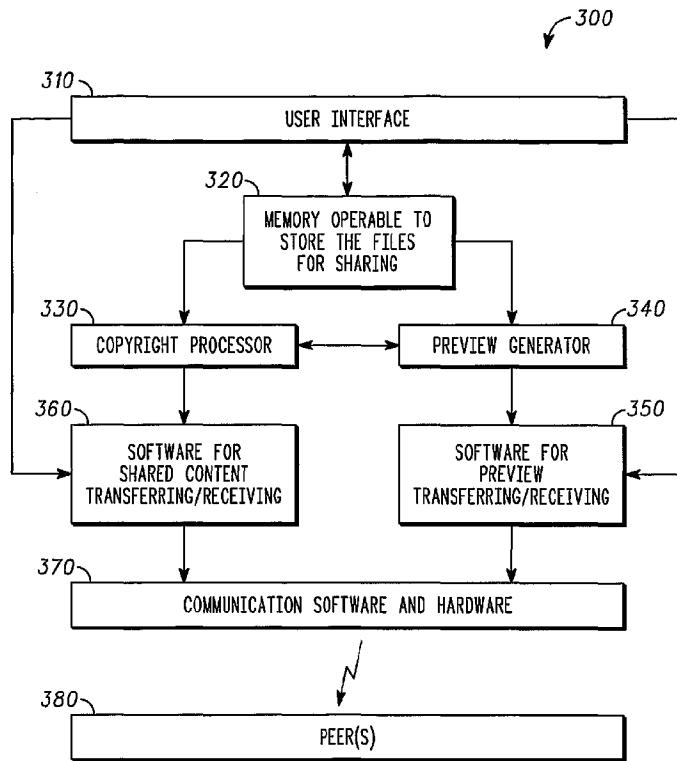
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(54) Title: DIGITAL CONTENT PREVIEW GENERATION AND DISTRIBUTION AMONG PEER DEVICES



(57) **Abstract:** Methods and devices for end-user generation of content previews by selecting digital content stored on a communications device, generating a content preview on the communications device from the digital content selected based on content transcoding information. In one embodiment, a mobile wireless communications device (300) includes a content preview generator (340) for generating content previews from content stored in memory based on content transcoding information, and a transmitter (380) for sharing the content previews from the mobile wireless communications device, for example in peer-to-peer communications.



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DIGITAL CONTENT PREVIEW GENERATION AND DISTRIBUTION AMONG PEER DEVICES

FIELD OF THE DISCLOSURE

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The present inventions relate generally to the communication of digital content, and more particularly to sharing digital information that may be the subject of rights protections among communications devices, including peer-to-peer transfers of copyright protected digital content, and methods therefor.

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BACKGROUND

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The transfer of copyright protected digital content is known generally. Presently, content providers are the only source for content previews, which may usually be transferred freely. Content preview recipients may obtain complete access to the corresponding content and corresponding rights from a content server or some other source only upon payment of a content license fee.

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U.S. Patent No. 6,372,974 entitled "Method And Apparatus For Sharing Music Content Between Devices" discloses peer-to-peer transfers of copyright protected content. In U.S. Patent No. 6,372,974, where only a single user license exists, the copyright protected content is removed from the device from which it is transferred upon verification that the content has been successfully transferred to or copied by a receiving device. Where multiple user licenses have been granted, the number of content copies transferred is controlled by decrementing a counter on the transferring device each time a copy of the content is transferred successfully.

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A Nokia publication entitled "Digital Rights Management And Superdistribution of Mobile Content" discusses the evolution of digital content protection from control over content delivery to control over content usage. In content delivery control architectures, an application server downloads content to a purchasing terminal upon payment confirmation by a payment collector, for example, a network operator. Delivery of protected content beyond the purchasing terminal is prohibited by a content forward-lock, which prevents the content or copies thereof from being re-transmitted by the original recipient. Content delivery control schemes have been used to prevent the proliferation of pirated cellular handset ring-tones.

According to the Nokia publication, in content usage control architectures, content usage rights are expressed in vouchers, which may be created and distributed separately from the content. According to this architecture, the content is registered by or with a voucher server. Payment for issued vouchers is collected by a payment collection entity, for example, a cellular communications network operator. Registered content previews may be transferred freely among terminals in peer-to-peer communications and viewed without a voucher, but the content may be fully accessed only upon purchasing a voucher from the payment collection entity.

A CONTENTGUARD publication entitled "eXtensible rights Markup Language (XrML) Example Use Cases 20 November 2001" discusses, in Section 4.15 thereof, a content superdistribution model wherein an original content consumer retains content rights, but subsequent content recipients must acquire rights to use the content. In Section 4.16, another content superdistribution model specifies how many content copies a distributor may make.

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The various aspects, features and advantages of the present inventions will become more fully apparent to those having ordinary skill in the arts upon careful consideration of the following Detailed Description of the Invention with the accompanying drawings described below.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a process flow diagram for exemplary modes of operation of the inventions.

10 FIG. 2 is an exemplary communications architecture in which the present invention may be practiced.

FIG. 3 is an exemplary mobile wireless communications device architecture for generating and distributing content previews.

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DETAILED DESCRIPTION

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The inventions pertain generally to the management and distribution of digital content, including the generation and sharing of content previews by and among peer communications devices, for example, mobile wireless communications devices, including cellular telephones, two-way pagers, personal digital assistants (PDAs), etc., among other wireless communications devices.

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The management and distribution of digital content, and the generation and sharing of content previews is, however, not limited to mobile communications devices. The invention is applicable more generally to fixed-location peer communications devices that communicate wirelessly

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or by wire-lines, for example, Internet subscribers and other networked client devices. The terms communications device and peer communications device refer generally to these and other fixed and mobile communications devices.

5 In the process flow diagram 100 of FIG. 1, at block 110, a communications device receives digital content, for example, audio or video or multi-media files or any other digital content. The digital content is generally stored on the communications device, for example, in non-volatile memory or on a hard disk drive or in some other storage media, depending
10 upon the type and capabilities of the communications device.

15 In some embodiments, the digital content has associated therewith content transcoding information that specifies content preview generation parameters, as discussed more fully below. The content transcoding information is also received by the communications device, as indicated at block 110 in FIG. 1.

20 In some embodiments, the content transcoding information is an integral part of the content, and in other embodiments the content transcoding information is associated separately from the content. Thus the transcoding information may be transmitted with or without the content, although the transcoding information is generally required to generate content previews. In one embodiment, the content previews are generated at communications devices, for example, at mobile wireless communications devices or at some other communications device for peer-to-peer distribution as discussed further below.

25 In one embodiment, the content transcoding information is a data structure that enables the generation of content previews from digital

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content. In embodiments where the content transcoding information is separate from the content, the transcoding information data structure includes content identification information associating it with corresponding content. The transcoding data structure may also include other data elements, for example, digital content preview generation information specifying limitations on content previews generated for the corresponding digital content with which the digital content transcoding data structure is associated. These and other aspects of the transcoding information are also discussed further below.

Generally, the content may or may not be the subject of rights protection, for example, copyright protection. If the content is copyright or otherwise protected, the content recipient may also receive rights associated with the content, for example, the right play or view the content, and in some cases the right to reproduce and distribute the content, the right to create derivatives from the content, including content previews, among other transferable rights.

In the exemplary communications system architecture 200 of FIG. 2, the content and any associated rights and transcoding information is provided from a content server 210 to a mobile wireless communications device 230 via cellular communications network, which generally includes terrestrial base station transceivers 220 and other infrastructure, which is known generally but not illustrated. The mobile wireless device 230 thus receives content via a cellular radio transceiver of the device.

In other architectures, the content and its associated information is received by other types of radio receivers, for example, by one of the IEEE 802.11 variety receivers or by a Bluetooth receiver.

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Alternatively, the content may be communicated over a wire-line, for example, to a subscriber connected to the Internet or to another network or server via a telephone line or cable modem connection, etc. In other embodiments, the device may receive the content device by other modes of communication, for example, the content may be flashed to storage media on the device, or firmware with the content may be installed on the device.

In FIG. 1, at block 120, digital content stored on the communications device is selected either for transmission or for generation of a corresponding content preview. At block 130, a content preview is generated on the mobile wireless communications device from the digital content selected. The selection of the content and the generation of the content preview is performed by a user at a user interface of the communications device, for example, using a preview generating application stored in device memory and operated by a digital processor.

The content preview generated for the selected digital content is created by the communications device user, for example, a licensed content recipient, rather than by the content provider. In some embodiments, the preview creator has a wide range of discretion in the creation of the preview, whereas in other embodiments the creator does not. Generally, the content creator may distribute the content preview to others, for example, in peer-to-peer communications.

The content preview is generated at the communications device based upon associated transcoding information that enables the generation of preview content for the associated digital content. The content transcoding information also specifies, among other things, limitations on content preview generation, for example, by specifying broad or narrow

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ranges of content preview variables that may be selected by a content preview creator. Thus in some embodiments the transcoding information permits the generation of content previews having substantial degrees of customization, as suggested. In other embodiments, however, the content 5 transcoding information may strictly limit the degree of customization of the content preview, for example, by allowing the generation of only one pre-determined type of content preview.

Exemplary variables that may be specified by the content 10 transcoding information include, for example, identification of one or more portions of the digital content that may be selected for inclusion in content previews. For example, only specific portions of a video clip or audio file may be available for incorporation in a content preview. Any portions of content that must be included in the content preview may also be identified. Thus certain content portions may be required and others may be optional. 15

Other variables that may be specified by the transcoding 20 information include the time duration of the content preview, or the number of video frames or amount of text, etc. These and other variables may be specified as being required or optional, and may be specified in ranges, for example, in terms of minimums and/or maximums, or otherwise. Other variables or elements, including color, content preview expiration period, image and/or audio quality, etc., may also be specified. The transcoding information may also include addresses of sources where the content may be obtained, for example, an IP/TCP uniform resource locator (URL), or other network address.

Generally these and many other aspects of the content preview 25 generation may also be controlled by the content transcoding information,

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depending on the desired level of control over the previews. The transcoding information is generally specified or defined by the content creator or assignee or some other party having control over the content, for example, a licensee.

5 In some embodiment, rights are also conveyed by the content transcoding information, for example, the right play or view the content, and in some cases the rights to reproduce and distribute the content, the right to derive other works from the content, including, among other rights, the right to produce or generate content previews. Some of the rights granted may have limits associated therewith, for example, limits on the number of content copies or previews that may be produced and distributed. In other embodiments, the rights are granted by other means, 10 some of which are known.

15 Generally, depending upon the rights granted, the creator of the content preview may generate multiple content previews each of which are different. In some embodiments, for example, the creator may generate content previews based upon the selection of different portions of multimedia content for inclusion in corresponding content previews. The creator may thus create customized previews for distribution to different 20 audiences, wherein the content previews are tailored to appeal specifically to the respective recipients.

25 In FIG. 1, at block 140, content or a content preview is transmitted from the communications device, for example, to another communications device. In the exemplary architecture of FIG. 2, the mobile wireless communication device 230 generates a plurality of at least two different content previews, preview # 1 and preview # 2, and transmits

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them to corresponding first and second peer mobile wireless communications devices 240 and 250, respectively. More generally, the previews may be transmitted to any other device, for example, to fixed location Internet subscribers or to an RF enable notebook computer, or to a two-way pager, or to some other peer communications device.

In one embodiment, content previews may be distributed freely by or from the device on which the previews were created. In some embodiments, the previews may be distributed freely by the device on which the previews were created without the loss of any rights associated with the content from which the previews were generated. In some embodiments, the previews created on the device may be distributed only once, for example, by using a forwarding lock. In other embodiments, there is no limit on the number of previews that may be distributed by the creator, wherein previews may be freely distributed indefinitely. For example, a recipient peer communication device may forward a preview, or copies thereof, to other peer devices, which may also distribute and/or copy it. In FIG. 2, peer device 240 forwards or sends a copy of the first preview to another peer device 260.

Any content preview recipients interested in obtaining full rights to the content may purchase the content and its corresponding rights from a content server or from some other source, for example, from a preview creator possessing rights to distribute copies of the original content. In some embodiments, the content preview includes or identifies one or more sources, for example, web addresses, from which the content may be purchased or otherwise obtained. In FIG. 2, peer communication device 250

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engages in a content purchase transaction with content server 210 via base station 220 to obtain the content of the second preview.

FIG. 3 is an exemplary mobile wireless communications device architecture 300 capable of generating content previews. The exemplary mobile wireless communications device comprises generally a user interface 310 from which a user selects content from or for which a content preview will be created or generated on the device. The content selected is generally stored in memory 320, which is typically RAM or some other storage media.

In embodiments where the content selected is copyright protected, the content selection is also communicated to a copyright processor 330, which is typically implemented as software that determines whether content preview generation is permissible. More generally, the copyright processor manages rights associated with the generation and distribution of content previews and in some embodiments content.

In some embodiments, the copyright generator determines the number of previews that may be generated for distribution (NP), and accounts for the generation and distribution thereof, for example, by decrementing a rights counter. In one embodiment, if $NP > 0$, preview generation is permitted based upon the corresponding transcoding information, or rules, which are also stored in memory, and NP is decremented for each preview generated. Content previews may be generated by the device until $NP = 0$, whereupon additional right must be obtained, for example from a content server. Similar processing maybe performed by the copyright processor for the copying and distribution of content, for example, in applications where the user possesses rights for copying and distributing content.

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A preview generator 340 may be activated by the copyright processor 330 or by the user interface 310 in response to inputs, for example, content selected by the user. The content preview is generated based upon input selections by the user at the user interface 310, within the limitations of the transcoding information, as discussed above. If preview generation is not authorized, e.g., if $NP = 0$, or preview generation rights have not been granted, content preview generation is not permitted. If there is no limitation on the number of content previews generated, or if rights management by a copyright processor is not required, the preview generator may be activated immediately.

The preview generator 340 generates the preview by accessing content from the memory 320 based upon the transcoding rules and input at the user interface 310. When the content preview is generated, it is stored in memory, for example, in memory 320. In some embodiments, the user is notified by a communication from the preview generator to the user interface. In FIG. 3, the copyright processor 330 and preview generator 340 are depicted as discrete entities, although more generally these entities may be implemented in an integrated form, for example, as a software program.

In FIG. 3, the device architecture includes software 350 for receiving content and content previews and software 360 for sharing content and previews via communications software and hardware 370 to peer devices 380. The software 350 and 360 may be integrated. In the exemplary mobile wireless communication device embodiment, the communication software and hardware is implemented as a wireless radio transceiver, but in other embodiments it could be a cable modem or some other communications device.

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As noted above, recipients of the preview interested in receiving full content may reply with requests to the sender or to another content source, for example the content server. The distribution of only the content preview, which generally includes substantially less data than the complete content, correspondingly reduces communications bandwidth usage.

While the present inventions and what are considered presently to be the best modes thereof have been described in a manner that establishes possession thereof by the inventors and that enables those of ordinary skill in the art to make and use the inventions, it will be understood and appreciated that there are many equivalents to the exemplary embodiments disclosed herein and that myriad modifications and variations may be made thereto without departing from the scope and spirit of the inventions, which are to be limited not by the exemplary embodiments but by the claims appended hereto.

What is claimed is:

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CLAIMS

1. A method for transferring digital content in peer-to-peer communications between a first peer communications device and a second peer communications device, comprising:

5 selecting digital content stored on the first peer communications device,

10 generating a content preview, at the first peer communications device, from the digital content selected,

 transmitting the content preview from the first peer communications device to the second peer communications device.

2. The method of Claim 1,

15 generating the content preview based upon corresponding content transcoding information,

 the content transcoding information specifying limitations on content preview generation.

20 3. The method of Claim 1, generating the content preview by selecting a portion of the digital content selected for inclusion in the content preview from a user interface of the first peer communications device.

25 4. The method of Claim 1, generating a plurality of at least two different content previews, at the first peer communications device, from the same digital content selected.

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5 5. The method of Claim 4, generating a plurality of at least two different content previews, at the first peer communications device, by selecting different portions of the selected digital content for inclusion in the corresponding content previews.

10 6. The method of Claim 4, transmitting the plurality of at least two different content previews from the first peer communications device to at least one other peer communications devices.

15 7. The method of Claim 1,
 the first peer communications device possessing a right to the digital content and a right to distribute the content preview generated,
 transmitting the content preview from the first peer communications device to the second peer communications device without relinquishing the right to the digital content.

20 8. A method in a mobile wireless communications device, comprising:

 selecting digital content stored on the mobile wireless communications device,
 the mobile wireless communications device possessing a right to generate a content preview from the digital content selected;
 generating a content preview, on the mobile wireless communications device, from the digital content selected.

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9. The method of Claim 8, generating the content preview within content preview generation limitations specified for the digital content selected.

5 10. The method of Claim 9, receiving the digital content and the content transcoding information at a receiver of the wireless communications device.

10 11. The method of Claim 8, generating the content preview by selecting a portion of the selected digital content for inclusion in the content preview from a user interface of the mobile wireless communications device.

15 12. The method of Claim 8, generating a plurality of at least two different content previews, on the mobile wireless communications device, from the same digital content selected.

20 13. The method of Claim 12, generating the plurality of at least two different content previews based on content transcoding information stored on the mobile wireless communications device, the content transcoding information specifying content preview generation limitations for the digital content selected.

25 14. The method of Claim 13, generating the plurality of content previews by selecting different portions of the selected digital content for

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inclusion in different content previews from a user interface of the mobile wireless communications device.

15. The method of Claim 8,

5 generating a plurality of at least two different content previews, on the mobile wireless communications device, for the same digital content selected,

at least two of the plurality of different content previews including different portions of the same digital content selected.

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16. The method of Claim 10,

the mobile wireless communications device possessing a right to the digital content and a right to distribute the content preview generated,

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transmitting the content preview from the mobile wireless communications device without relinquishing the right to the digital content.

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17. A method in a mobile wireless communications device, comprising:

selecting digital content stored on the mobile wireless communications device,

generating a plurality of different content previews, on the mobile wireless communications device, from the same digital content selected.

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18. A mobile wireless communications device, comprising:
digital content and corresponding content transcoding
information stored in memory,

5 generating content previews from corresponding digital content;

a content preview generator,

the content preview generator generating content previews
from content stored in memory based on the content transcoding
information;

10 a transmitter for sharing the content previews from the mobile
wireless communications device.

19. The mobile wireless communications device of Claim 18,

the content transcoding information specifying whether content
15 previews may be generated,

the content preview generator generating content previews for
the digital content selected only if the content transcoding information
specifies that content previews may be generated.

20. A digital content transcoding data structure enabling
content previews to be generated from digital content at mobile wireless
communications devices, comprising:

digital content identification associating the digital content
transcoding data structure with corresponding digital content;

25 digital content preview generation information specifying
limitations on user generated content previews for the corresponding digital

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content with which the digital content transcoding data structure is associated.

21. The digital content transcoding data structure of claim 20,
5 at least one of the digital content preview generation limitations specifying portions of the digital content which may be selected by content preview creators for inclusion in content previews generated for the corresponding digital content with which the digital content transcoding data structure is associated.

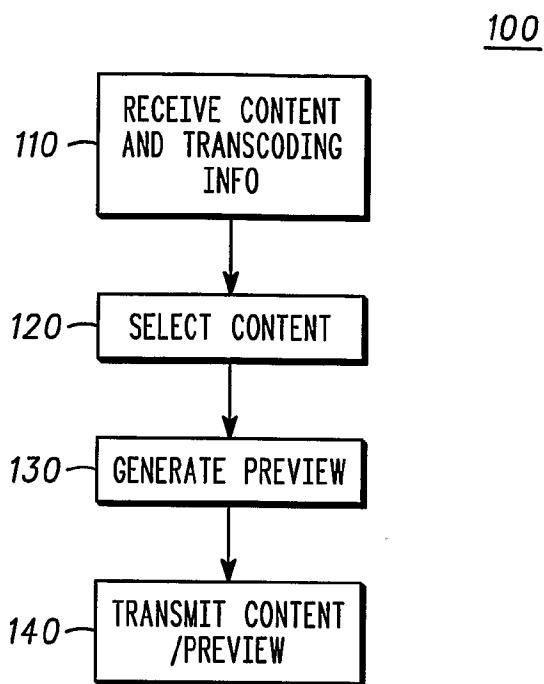
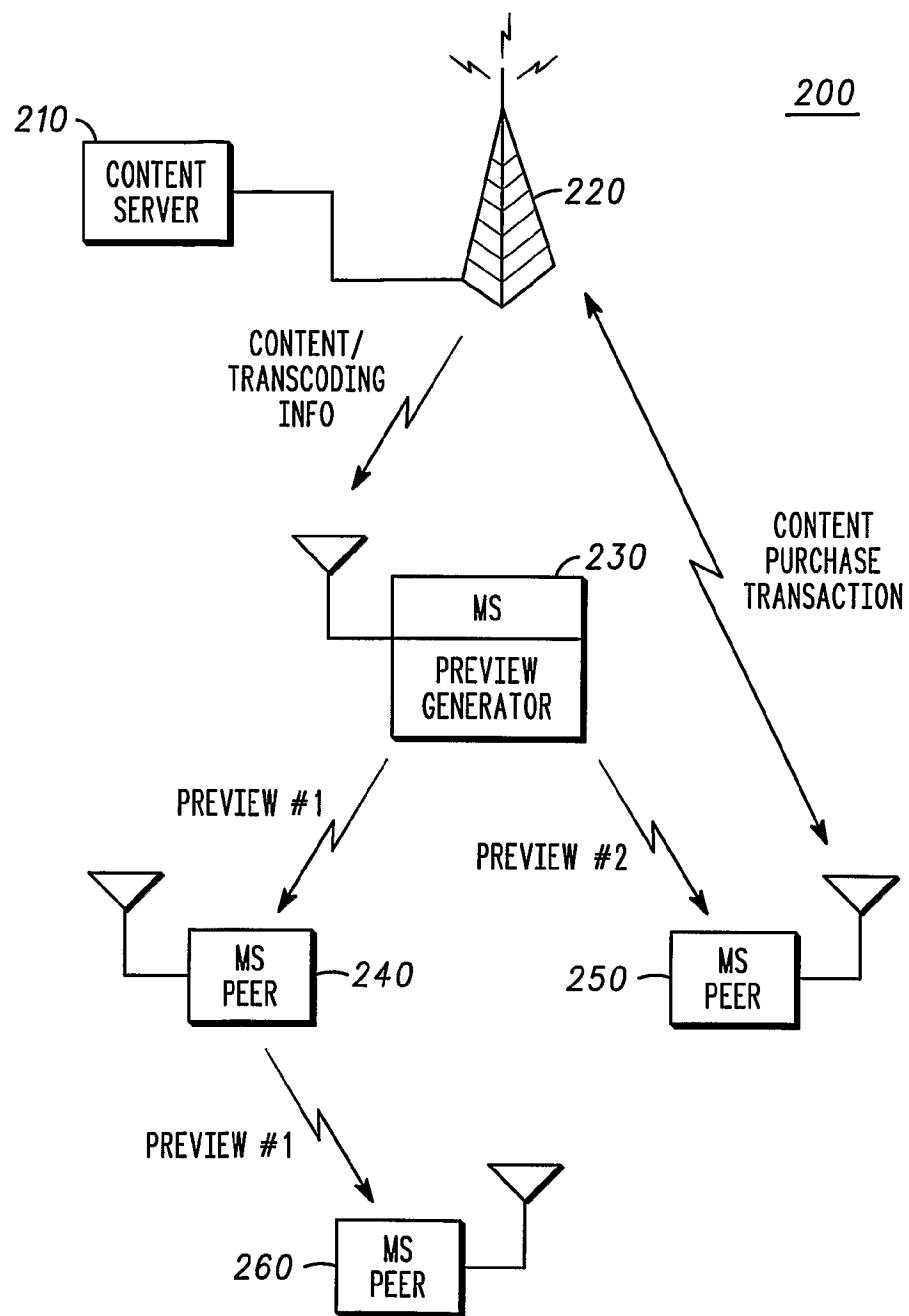
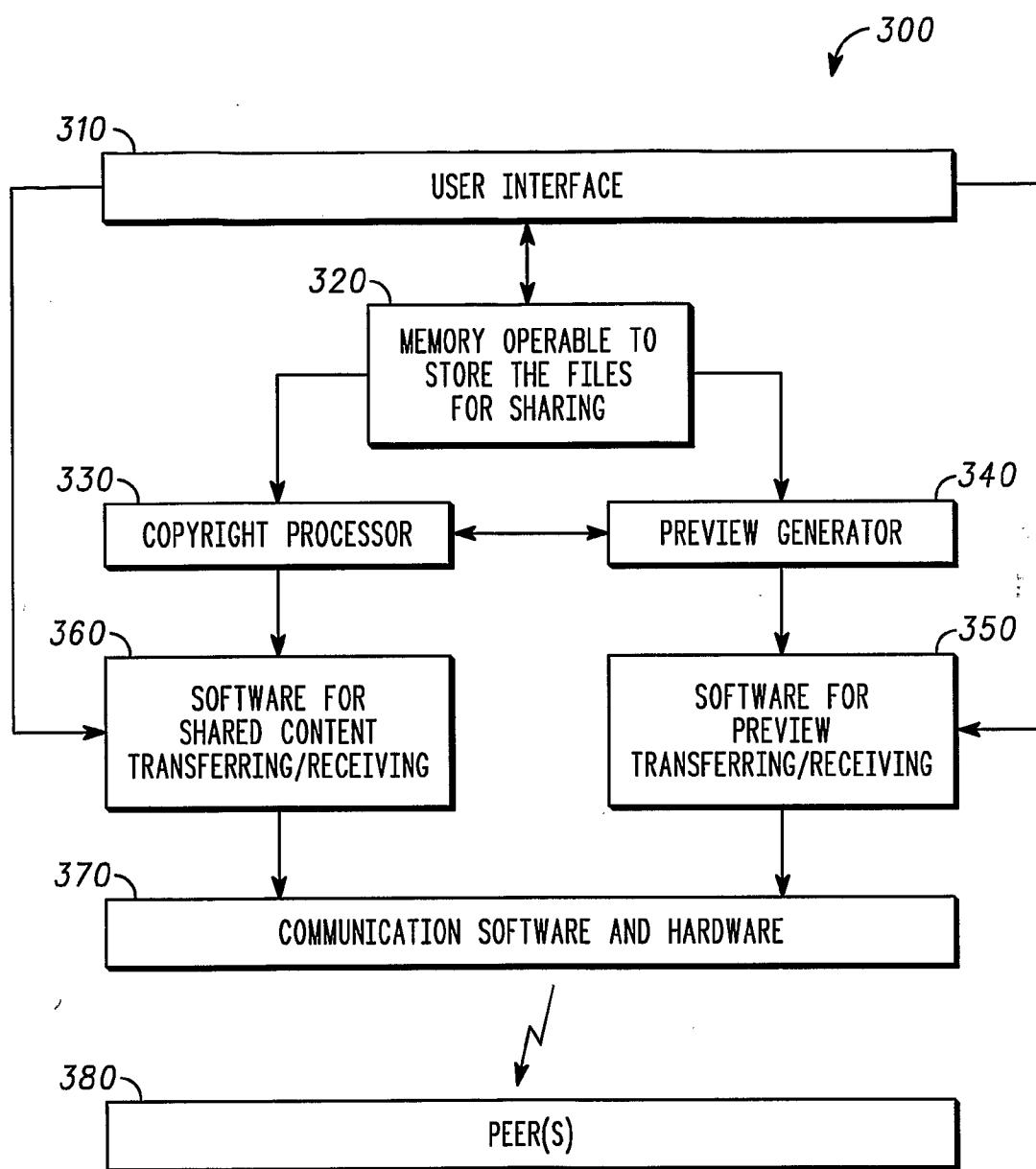


FIG. 1

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**FIG. 2**

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**FIG. 3**

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(72) Inventors: **SHEYNMAN, Arnold**; 3952 Venice Court, Glenview, IL 60025 (US). **PATZER, Robert**; 211 Alpine Drive, Lake Zurich, IL 60047 (US). **MOWRY, Kevin**; 9703 Windy Hollow Drive, Irving, TX 75063 (US).

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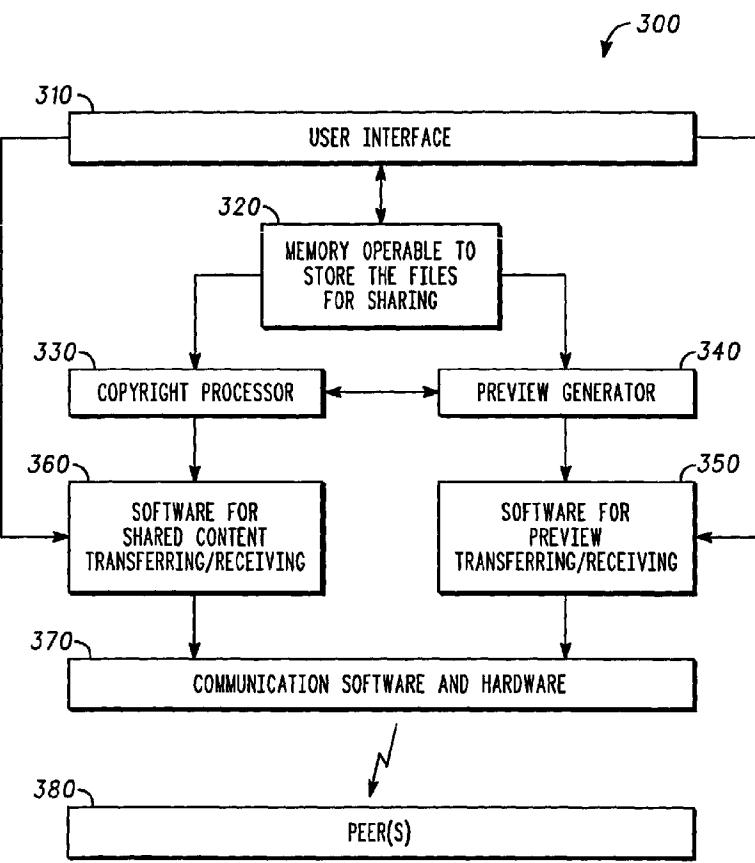
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(54) Title: DIGITAL CONTENT PREVIEW GENERATION AND DISTRIBUTION AMONG PEER DEVICES

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(57) Abstract: Methods and devices for end-user generation of content previews by selecting digital content stored on a communications device, generating a content preview on the communications device from the digital content selected based on content transcoding information. In one embodiment, a mobile wireless communications device (300) includes a content preview generator (340) for generating content previews from content stored in memory based on content transcoding information, and a transmitter (380) for sharing the content previews from the mobile wireless communications device, for example in peer-to-peer communications.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/37975

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04L 27/04, 27/12, 27/20
US CL : 375/295

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 375/295, 240.01, 240.12, 240.23, 240.25, 348/588, 593, 709/205, 231

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2001/0004417 A1 (Narutoshi et al.) 21 June 2001 (21.06.2001), Fig.1 and paragraphs 6-8 and 41	1, 2, 8-10, 18, and 19
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Y		4,5,12-15 and 17
Y, P	US 2003/0065802 A1 (Vitikainen et al.) 03 April 2003, paragraphs 38 and 39.	3, 6, 7, 11, and 16
Y	US 5,189,516 A (Angell et al.) 23 February 1993, Fig. 1B and 2 and columns 3-4.	3, 4, 6, 7, 11, 12, 13, 16, and 17
X	US 2002/0114465 A1 (Shen-Orr et al.) 22 August 2002, Figs.3-5 and paragraphs 55- 57 paragraphs 5, 8, 10, 12-14.	20 and 21
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Y		5, 14 and 15

<input type="checkbox"/>	Further documents are listed in the continuation of Box C.	<input type="checkbox"/>	See patent family annex.
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"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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